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ABSTRACT

This paper describes the continued development of the "Trouble Shooting" Checklists. These checklists are based on change agent responses and are designed to be predictive of an institution's change potential for the adoption of innovations. The development of two new instruments is described, both innovation-free. One applies to higher educational settings, while the other applies to school-based settings. As in the earlier, innovation-specific forms, the new forms are divided into distinct information areas and identify the ideal situation, marginally acceptable and unacceptable situations for innovation adoption. (Author)

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The Center's work is supported by the National Institute for Education and by the University of Texas System, as well as through contract research and development programs for public agencies.

The "Trouble Shooting" Checklists Revisited: The Development of New Innovation-Free Checklists to Measure Change Potential In Higher Educational and School-Based Settings

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The "Trouble Shooting" Checklists have been developed to assist educational change agents and administrators concerned with change, in their assessment of organizational variables predictive of an institution's potential for successfully adopting innovations. Two previous experimental checklists, the TSC-A and the TSC-B (Manning, 1973, 1974), were limited to higher educational settings and were innovation-specific in that they focused on institutions adopting modules and personal assessment feedback systems (PAF) with a counseling orientation. Two new, experimental "Trouble Shooting" Checklists have now been designed which are innovation-free and which are predictive of institutional change potential in higher educational and school-based settings.

Theoretical Framework

The "Trouble Shooting" Checklists have been developed in conjunction with a project which has as its theoretical framework a concerns-based adoption model (Hall, 1974; Hall, Wallace, & Dossett, 1973). In brief, the concerns-based adoption model orders the effects of stages of human concern in interaction with levels of use of an innovation. The ordering is a developmental one which postulates that both stages of concern and levels of use become progressively more sophisticated throughout the adoption-implementation process. The relationship of the TSC to the concerns-based adoption model is based on the assumption that

in order for stages of concern and levels of use to develop progressively through the adoption-diffusion process, an institution must meet certain conditions and be in an appropriate state of readiness.

All forms of the TSC identify for the administrator or the change agent both ideal and unacceptable organizational variables related to the adoption and implementation of innovations (the earlier TSC forms also identified marginal variables). In order to make such an assessment, the "Trouble Shooting" Checklists have been based on the assumption that the following dimensions are crucial: the general organizational structure of the institution; the descriptive characteristics of its members and the organizational climate; personality, leadership styles and concerns of its members; the nature of communications which occur both within and without the institution; the levels at which previous innovations have been used; and, the personality and social characteristics of the students.

The Innovation-Free form of the TSC for Higher-Educational Settings

The development of the original TSC-A and the TSC-B has been documented in detail in both the TSC manual (Manning, 1973) and a 1974 AERA paper (Manning, 1974). In brief, a twenty-nine page, open-ended questionnaire was given to six change agents. This questionnaire was broken into ideal, marginal, and unacceptable question areas. The responses to this questionnaire served as a data base for the two original checklists (TSC-A and TSC-B). After a series of rewritings and refinements, these responses gradually became checklist items. They were arbitrarily assigned score values of 2, 1, and 0 for items classified as ideal, marginal and unacceptable, respectively.

The innovation-free form of the TSC for higher education, was built directly from the TSC-A and the TSC-B. The first step was the elimination of all items which specifically referred to modules, counseling or assessment batteries, as well as items which had any innovation-specific reference. The remaining items were then examined for their appropriateness in each subscale. Since the TSC-B had items in common with the TSC-A, these items were eliminated. The remaining items were pooled to form the new instrument. The next step was to modify scale and subscale titles in order to make them applicable to all departments in higher educational institutions. As a result of these modifications, one subscale was eliminated. In its place another subscale was built from the TSC information base.

This first experimental, innovation-free form of the TSC for higher educational institutions consisted of 495 items organized into 16 subscales in 5 major scales, and was 39 pages. All subscales were forced-choice requesting that 1/3 of the total items in each subscale be selected. The scales and subscales were as follows:

Scale I: Organizational Structure
- Subscale A: Organizational Characteristics
- Subscale B: Social-Professional Climate of the Organization
- Subscale C: Descriptive Characteristics of the Faculty
- Subscale D: Descriptive Characteristics of the Administration

Scale II: Faculty, Department Chairperson and Dean (personality and leadership dynamics)
- Subscale A: Personality, Leadership Styles and Concerns of Faculty
- Subscale B: Personality, Leadership Styles and Concerns of the Department Chairperson
- Subscale C: Personality, Leadership Styles and Concerns of the Dean

Scale III: Nature of Communications
- Subscale A: General Nature of All Communications
- Subscale B: Frequency and Nature of Letters and Phone Calls
- Subscale C: Frequency and Nature of Personal Visits

Scale IV: Level of Usage
- Subscale A: First Stages of Adoption
- Subscale B: Predictions of Later Stages of Adoption
- Subscale C: Organizations Members' Attitudes Towards Innovations

Scale V: Students
- Subscale A: Personality and Social Characteristics of Students
- Subscale B: Academic Style of Students
- Subscale C: Students' attitudes towards innovation

Item Analysis

The first experimental, innovation-free form of the TSC for higher educational institutions was distributed to a small, nation-wide sample of change agents who were asked to complete the TSC and to critique and comment upon it in detail. In such a way, it was possible to obtain detailed responses from a representative sample of would-be users in addition to the data necessary for the item analysis. A synthesis of the critiques was compiled and remedial actions outlined. Altogether, thirty institutions were rated and included in the following analyses.

The first type of analysis focused on the following question: do items assigned to one of the two groups of items (ideal and unacceptable) belong with their respective groups? This analysis was made on all items in a single analysis and resulted in correlations between each item and the total score for each group of items (ideal and unacceptable.) The alphas for the two groups of items were as follows: items classified as ideal = .99; and, items classified as unacceptable = .97 (see table 1).

A second type of analysis focused on the following question: do items which are marginally classified belong with their own group or with one of the two remaining groups (i.e., ideally classified items or unacceptably classified items)?

Table 1*

Each item classified as ideal, correlated with the total score of items classified as ideal; each item classified as unacceptable correlated with the total score of items classified as unacceptable.

Item Number**	Item classified as ideal correlated with total score of items classified as ideal	Item classified as unacceptable correlated with total score of items classified as unacceptable
1		.5563
2	.6987	
3	.8395	
4	.7678	
5	.6835	
7		.5763
8	.6882	
9		.7115
10	.7574	
11	.6251	
12		.5294
13		.4516
14	.6678	
15		.4882
16	.7061	
17		.4873
18		.6973
19		.8029
20		.6676
21	.7650	
22	.8130	
25	.7270	
26		.6626
27	.7432	
29		.5027
30		.6073
31		.5472
32		.4427
33	.7161	
34	.5489	
35	.8591	

* This table includes information only on the final 100 items selected.

** Item numbers refer to numbers used in the second innovation-free form of the higher educational TSC included in the appendix.

Table 1 (continued)

Item Number	Item classified as ideal correlated with total score of items classified as ideal	Items classified as unacceptable correlated with total score of items classified as unacceptable
36	.5995	
38	.6497	
39	.6344	
40		.5830
41		.4732
42	.5795	
44	.5489	
45	.6046	
46	.7841	
47	.6339	
48		.6550
49	.7037	
50	.7326	
51		.7386
52	.7400	
53	.6371	
54	.6423	
55	.5366	
57	.6104	
58		.6345
59		.6608
60	.6099	
61	.6913	
62		.6537
63	.8947	
64	.7048	
65	.8933	
66	.8947	
67	.7851	
68	.5567	
69	.6415	
70		.5563
71	.7589	
72		.5346
73	.4496	
74		.5283
75		.6420
76	.8330	
77	.8108	
78		.6583

Table 1 (continued)

Item Number	Item classified as ideal correlated with total score of items classified as ideal	Item classified as unacceptable correlated with total score of items classified as unacceptable
79		.6030
80	.7525	
81	.7821	
82		.4571
83		.7246
85	.6505	
86	.7882	
37		.6208
88		.5022
89		.6987
90		.7333
92	.6536	
93	.6783	
94	.6319	
95	.8947	
96	.6061	
97		.5500
98	.5925	
99		.4855
100	.5976	

A single correlational analysis was made to answer this question and resulted in two correlations: a correlation between each marginal item and the total score of unacceptable items; and, a correlation between each marginal item and the total score of ideal items. Items which correlated highly with the total score for ideally classified items and which correlated low with the total score for unacceptably classified items, were then considered in a later analysis for assignment to the ideally classified item pool; items which correlated highly with the total score for the unacceptably classified items and which correlated low with the total score for the ideally classified items, were then considered in a later analysis for assignment to the unacceptably classified item pool. (See Table 2.)

A third type of analysis focused on whether or not items were internally consistent within each of the five scales. This analysis actually consisted of two separate analyses (since each item was taken from one of two data pools, consisting of items designated as ideal and items designated as unacceptable). These analyses resulted in correlations between each item and each of the total scale scores. (see Table 3). Items which correlated above .34 in these analyses were saved for the final analysis described below. One of the results of these analyses was that the scales demonstrated a lack of independence. In other words, it can be concluded that institutions which rate highly in one scale are likely to rate highly in other scales as well.

The final type of analysis, like the third analysis, focused on whether or not items were internally consistent within each scale and within the entire instrument. However, this analysis included only the items which correlated above .34 on the third analysis described above, and the marginal items selected from

Table 2*

Correlations of items classified as marginal with total scores of items classified as ideal and total score of items classified as unacceptable.

Item Number**	Correlations with total score of items classified as unacceptable	Correlations with total score of items classified as ideal
I. A. 6	.568	-.568
I. A. 20	.463	-.446
I. A. 26	-.490	.430
I. B. 7	.617	-.567
I. B. 13	.675	-.676
I. B. 21	.645	-.708
I. B. 23	.521	-.558
I. C. 12	.628	-.624
I. C. 23	.455	-.597
I. D. 11	.531	-.519
I. D. 15	.675	-.522
I. D. 18	.678	-.627
I. D. 34	.435	-.533
II. A. 12	.464	-.559
II. A. 14	.643	-.734
II. A. 19	-.665	.795
II. A. 24	.419	-.481
II. B. 17	.590	-.511
II. C. 3	.588	-.487
II. C. 12	.470	-.562
III. A. 3	.513	-.424
III. B. 2	.621	-.440
III. C. 7	.528	-.467
III. C. 15	.641	-.525
IV. B. 8	.531	-.524
IV. C. 3	.400	-.513
IV. C. 8	.446	-.530
IV. C. 25	.424	-.545

*This table includes information only on items classified as marginal which were reclassified as ideal or unacceptable for the final analysis.

**Item numbers refer to the first experimental form of the innovation-free TSC.

Table 2 (continued)

Correlations of items classified as marginal with total scores of items classified as ideal and total score of items classified as unacceptable.

Item Number	Correlations with total score of items classified as unacceptable	Correlations with total score of items classified as ideal
IV. C. 28	.666	-.628
V. A. 10	.636	-.543
V. B. 1	.557	-.591
V. B. 4	.507	-.535
V. B. 10	.469	-.515
V. B. 12	.598	-.508
V. B. 17	.632	-.688
V. B. 36	.503	-.461

Table 3*

Each item correlated with total scale scores for five scales.

ITEMS CLASSIFIED AS UNACCEPTABLE

Item Number**	1	2	3	4	5
1 (III C 13)	.474	.621	.543	.487	.295
7 (III A 20)	.551	.630	.563	.438	.305
9 (II A 5)	.689	.764	.461	.660	.559
12 (V B 9)	.863	.772	.498	.799	.738
13 (III C 3)	.325	.439	.552	.398	.311
15 (II A 36)	.375	.368	.584	.526	.390
17 (V B 15)	.366	.332	.469	.495	.665
18 (IV A 19)	.655	.634	.563	.761	.500
19 (III C 2)	.716	.729	.799	.747	.607
20 (I D 5)	.796	.758	.445	.484	.339
26 (II C 8)	.565	.682	.667	.657	.334
29 (IV C 29)	.397	.361	.552	.561	.459
30 (III A 7)	.534	.637	.564	.657	.250
31 (I C 5)	.626	.532	.443	.445	.324
32 (II B 32)	.529	.425	.381	.368	.192
40 (I B 11)	.524	.600	.404	.556	.525
41 (II C 5)	.397	.541	.461	.383	.281
48 (II B 29)	.542	.606	.679	.665	.441
51 (V B 3)	.644	.754	.622	.691	.579
58 (III A 2)	.553	.600	.621	.626	.426
59 (III B 13)	.567	.626	.730	.549	.476
62 (II A 25)	.699	.684	.330	.574	.599
70 (II A 37)	.474	.621	.543	.487	.295
72 (II C 27)	.472	.624	.485	.387	.358
73 (I C 3)	.606	.497	.232	.315	.237
74 (IV C 27)	.414	.473	.497	.595	.418
75 (I C 32)	.581	.573	.730	.645	.302
78 (II B 21)	.629	.682	.687	.570	.278
79 (IV B 12)	.597	.637	.584	.570	.194
82 (II A 42)	.492	.459	.356	.366	.324
83 (III C 26)	.581	.653	.803	.722	.500
87 (II B 14)	.567	.666	.629	.560	.260
88 (III B 7)	.436	.419	.582	.521	.288
89 (I A 5)	.709	.712	.471	.669	.512
90 (III A 17)	.654	.673	.824	.678	.417
97 (V B 37)	.415	.463	.683	.544	.342
99 (II A 22)	.478	.399	.299	.564	.472

*This table includes information only on the final 100 items selected.
**Item numbers refer to numbers used in the second experimental form of the higher-educational TSC. Numbers in parenthesis refer to numbers used in the first experimental form of the higher-educational TSC.

Table 3 (continued)

Each item correlated with total scale scores for five scales.

ITEMS CLASSIFIED AS IDEAL

Item Number	1	2	3	4	5
2 (V B 18)	.705	.561	.416	.633	.753
3 (II A 26)	.869	.781	.475	.853	.678
4 (I C 4)	.837	.640	.409	.782	.677
5 (I D 8)	.753	.693	.445	.580	.463
8 (V B 34)	.670	.513	.466	.663	.738
10 (V B 5)	.639	.643	.651	.681	.767
11 (III C 11)	.468	.618	.750	.533	.433
14 (I C 18)	.689	.513	.480	.667	.593
16 (IV B 9)	.720	.646	.457	.791	.479
21 (I D 14)	.806	.801	.488	.675	.525
22 (II A 28)	.780	.806	.565	.752	.651
25 (IV A 21)	.712	.561	.503	.717	.725
27 (IV A 9)	.783	.612	.370	.862	.632
33 (II A 9)	.658	.703	.457	.654	.670
34 (I D 12)	.606	.616	.257	.505	.354
35 (II A 23)	.855	.844	.542	.842	.663
36 (III A 5)	.448	.591	.868	.461	.322
38 (V A 16)	.623	.501	.439	.620	.696
39 (I A 14)	.596	.600	.507	.592	.494
42 (V A 5)	.459	.460	.385	.581	.723
44 (III B 21)	.429	.501	.761	.374	.396
45 (I A 16)	.580	.520	.367	.711	.498
46 (IV B 10)	.764	.661	.464	.826	.744
47 (I D 19)	.722	.629	.235	.612	.515
49 (II B 5)	.651	.723	.493	.698	.517
50 (IV B 1)	.692	.572	.604	.810	.587
52 (V B 7)	.660	.648	.727	.638	.612
53 (III A 21)	.536	.534	.744	.479	.556
54 (II B 11)	.644	.699	.475	.593	.369
55 (V A 19)	.477	.423	.296	.474	.715
57 (V A 7)	.539	.542	.348	.572	.701
60 (II A 16)	.538	.615	.412	.493	.618
61 (III A 12)	.352	.555	.745	.428	.519
63 (IV C 15)	.902	.795	.537	.935	.753
64 (I D 7)	.666	.778	.518	.615	.485
65 (IV C 7)	.881	.836	.584	.903	.710

Table 3 (continued)

ITEMS CLASSIFIED AS IDEAL

Item Number	1	2	3	4	5
66 (IV C 4)	.902	.795	.537	.935	.753
67 (III A 26)	.695	.735	.777	.675	.593
68 (V A 22)	.494	.395	.306	.524	.770
69 (V B 38)	.594	.489	.480	.616	.677
71 (IV C 19)	.769	.576	.496	.877	.643
76 (IV C 16)	.812	.741	.649	.809	.654
77 (IV A 10)	.769	.661	.602	.800	.759
80 (V B 23)	.719	.661	.475	.702	.755
81 (IV C 14)	.835	.690	.371	.827	.681
85 (III C 12)	.502	.586	.810	.523	.502
86 (V B 14)	.730	.751	.483	.786	.716
92 (III C 27)	.470	.664	.858	.498	.441
93 (III C 23)	.534	.586	.858	.606	.472
94 (IV A 5)	.582	.628	.305	.723	.540
95 (IV C 10)	.902	.795	.537	.935	.753
96 (V B 24)	.604	.470	.252	.576	.765
98 (V C 15)	.463	.496	.363	.534	.799
100 (V C 3)	.504	.509	.389	.507	.750

the second analysis, also described above. This analysis actually consisted of two separate analyses (since each item was taken from one of two data pools consisting of items designated as ideal and items designated as unacceptable). These analyses resulted in correlations of each item with the total score of the instrument and with its total scale score (see table 4). The alphas of the five scales for the ideally classified items are as follows: scale 1 = .96; scale 2 = .96; scale 3 = .95; scale 4 = .96; scale 5 = .95; and total alphas of the five scales for the unacceptably classified items are as follows: scale 1 = .95; scale 2 = .94; scale 3 = .94; scale 4 = .92; scale 5 = .89; and total alpha = .98.

Item Selection

After the sampling was completed it was decided that the ideal length of the instrument should be 100 items, and that the forced-choice format should be changed to a five-point Likert-type scaling. Consequently, all marginal items were removed except those which correlated highly in the final analysis after having been re-classified as ideal or unacceptable. The 100 items which had the highest overall correlations for all of the analyses were, then, selected from the remaining items. Finally, these highest correlating items were examined in terms of the detailed comments made by change agents who had completed the checklist. Some items were then rewritten for greater clarity.

Due to the fact that the scaling has now been changed from forced-choice to Likert-type and, because some of the finally selected items have been rewritten, a second, and final, items analysis is planned. However, a second item analysis probably will not result in any great alteration of the present instrument, since

Table 4*

Each item correlated with total score of instrument and total scale score.

ITEMS CLASSIFIED AS UNACCEPTABLE

Item Number**	Correlation with total score of instrument	Correlation with total scale score
1 (III C 13)	.8073	.8145
6 (I B 13)	.6774	.6961
7 (III A 20)	.7229	.8272
9 (II A 5)	.7096	.7465
12 (V B 9)	.7327	.5987
13 (III C 3)	.7688	.7932
15 (II A 36)	.6608	.6750
17 (V B 15)	.5427	.6887
18 (IV A 19)	.7202	.7428
19 (III C 2)	.6606	.7198
20 (I D 5)	.5668	.7005
24 (IV C 8)	.6911	.7384
26 (II C 8)	.6561	.6124
28 (I A 6)	.6725	.7931
29 (IV C 29)	.6653	.7036
30 (III A 7)	.5210	.6807
31 (I C 5)	.6758	.7292
32 (II B 32)	.5864	.7322
37 (IV C 28)	.6310	.6545
40 (I B 11)	.6379	.6100
41 (II C 5)	.6298	.6571
43 (V B 36)	.5830	.7032
48 (II B 29)	.6040	.6438
51 (V B 3)	.5925	.7527
56 (I C 23)	.5875	.6292
58 (III A 2)	.6059	.6120
59 (III B 13)	.5823	.7396
62 (II A 25)	.5777	.6069
70 (II A 37)	.7039	.7322
72 (II C 27)	.6265	.6821
73 (I C 3)	.6845	.7438
74 (IV C 27)	.6310	.6876
75 (I C 32)	.5747	.6584
78 (II B 21)	.6037	.6729
79 (IV B 12)	.5904	.6110
82 (II A 42)	.7430	.6570

*This table includes information only on the final 100 items selected.
**Item numbers refer to numbers used in the second experimental form of the higher-educational TSC. Numbers in parenthesis refer to numbers used in the first experimental form of the higher-educational TSC.

Table 4 (continued)

Each item correlated with total score of instrument and total scale score.

ITEMS CLASSIFIED AS UNACCEPTABLE
(continued)

Item Number	Correlation with total score of instrument	Correlation with total scale score
83 (III C 26)	.6298	.7470
84 (III C 15)	.7181	.7968
87 (II B 14)	.7297	.7975
88 (III B 7)	.6220	.7399
89 (I A 5)	.7094	.7328
90 (III A 17)	.8343	.8699
91 (I D 11)	.5906	.6863
97 (V B 37)	.5014	.6958
99 (II A 22)	.6466	.6125

ITEMS CLASSIFIED AS IDEAL

Item Number	Correlation with total score of instrument	Correlation with total scale score
2 (V B 18)	.6939	.7619
3 (II A 26)	.8568	.8435
4 (I C 4)	.6507	.7128
5 (I D 8)	.7045	.6712
8 (V B 34)	.6872	.7384
10 (V B 5)	.7500	.7732
11 (III C 11)	.6355	.7526
14 (I C 18)	.7024	.7856
16 (IV B 9)	.7144	.7906
21 (I D 14)	.8256	.8515
22 (II A 28)	.8464	.7964
23 (I A 26)	.7579	.7724
25 (IV A 21)	.7280	.7167
27 (IV A 9)	.7441	.8618
33 (II A 9)	.7167	.7091
34 (I D 12)	.6799	.7457
35 (II A 23)	.7965	.7640
36 (III A 5)	.5990	.8715
38 (V A 16)	.6409	.6936
39 (I A 14)	.6370	.6129
42 (V A 5)	.5773	.7184

Table 4 (continued)

Each item correlated with total score of instrument and total scale score.

ITEMS CLASSIFIED AS IDEAL

Item Number	Correlation with total score of instrument	Correlation with total scale score
44 (III B 21)	.5429	.7654
45 (I A 16)	.6194	.6166
46 (IV B 10)	.7845	.8256
47 (I D 19)	.7724	.8217
49 (II B 5)	.7783	.8074
50 (IV B 1)	.7311	.8099
52 (V B 7)	.7349	.6061
53 (III A 21)	.6435	.7519
54 (II B 11)	.7032	.7238
55 (V A 19)	.5290	.7159
57 (V A 7)	.6101	.7053
60 (II A 16)	.6072	.6152
61 (III A 12)	.5711	.7449
63 (IV C 15)	.8957	.9347
64 (I D 7)	.7992	.8317
65 (IV C 7)	.8947	.9025
66 (IV C 4)	.8957	.9347
67 (III A 26)	.7801	.7815
68 (V A 22)	.5502	.7696
69 (V B 38)	.6322	.6698
71 (IV C 19)	.7563	.8768
76 (IV C 16)	.8279	.8091
77 (IV A 10)	.8065	.8000
80 (V B 23)	.7503	.7619
81 (IV C 14)	.7789	.8272
85 (III C 12)	.6528	.8089
86 (V B 14)	.7906	.7233
92 (III C 27)	.6543	.8574
93 (III C 23)	.6805	.8574
94 (IV A 5)	.6338	.7231
95 (IV C 10)	.8957	.9347
96 (V B 24)	.6077	.7684
98 (V C 15)	.5871	.7932
100 (V C 3)	.5955	.7515

the item correlations were reasonably high. Therefore, the second item analysis will be more precautionary than exploratory in nature.

Description of Instrument

Since the instrument has been limited to 100 items in a Likert-format, the marginal items and all 16 subscales have been eliminated. The instrument now consists of 100 randomized items which can be broken into 5 distinct scales containing twenty items each. Some of the scale names have been modified for greater clarity and are now as follows:

Scale I: Organizational Climate
(Items in Scale I attempt to tap information about the organizational climate by focusing in such variables as: the power system within the organization; the kinds of behaviors that are reinforced; organizational values and norms; and "openness" of the organization.)

Scale II: Organizational Staff
(Items in Scale II describe personality and leadership characteristics of faculty and administrators related to the successful adoption of innovations. Items focus an interaction between faculty members, between administrators, and between faculty and administrators. In addition, items seek to identify attitudes and interests of the faculty, and administration as they are related to innovation.)

Scale III: Communication
(Items in Scale III are related to the communication process associated with successful adoption and implementation of innovations. The items probe the degree to which information exchange is superficial, restricted, or productive. Items also attempt to tap the quality of communication between change agents (both internal and external) and the staff of the institution.)

Scale IV: Innovative Experience
(Items in Scale IV describe the experience and degree of sophistication that an institution has had with the adoption and implementation of innovations. Items attempt to identify degrees of awareness of basic information about innovations, and indications by faculty members that they have some idea how to integrate an innovation into their teaching.)

Scale V: Students
(Items in Scale V attempt to measure characteristics of students which can affect the adoption-implementation process. In measuring these characteristics of students' attitudes towards the faculty, and their course work are considered to be crucial, as well as student enthusiasm, student interaction with peers and faculty, and student individuality.

Scoring of the Instrument

Detailed instructions for scoring the instrument are included with the instrument in Appendix A. In brief, a reverse key is given for unacceptably classified items, and five keys are given listing the randomized numbers for each of the five separate scales. There are a total of six scores derivable from the instrument, five scale scores and a total score.

Future Plans for the Higher Educational Based TSC

Before the second item analysis is conducted, the higher educational based TSC will be given to organizational development specialists in order to obtain suggestions for modification of individual items. After the instrument has been scrutinized in this manner, it will be submitted to a sample of change agents, and a minimum of thirty institutions will be rated. The types of item analyses used will be identical to those used in the first analyses.

Initial Norming and Validation

A minimum of ten external change agents will be contacted and asked to subjectively select fifty-two institutions: 25% (13) of which are ideally suited to successfully adopt an innovation; 50% (26) of which are marginally suited; and, 25% (13) of which are unacceptable. This distribution should increase the chances that a full and representative range of scores are obtained. After these fifty-two institutions have been identified, an internal change agent and faculty member for each institution will be selected and asked to rate their institution by using the TSC. Score ranges of their TSC ratings will, of course, then be used to deter-

mine norms for the scale scores and total score.

A validity coefficient will be determined by correlating the first group of external change agents' subjective ratings with the second group of internal change agent and faculty ratings. However, before this validity coefficient is computed, a comparison will be made between the ratings of the internal change agent group (who may have higher status due to the fact that they are in a position to bring about change) and the faculty group. This comparison will be made to check for the contaminating affects of a higher status TSC respondent giving more favorable ratings for their institution. If these two groups do differ significantly, two separate coefficients will be recorded.

The Innovation - Free Form of the TSC For School-Based Settings

The items for the school-based TSC were collected from two sources: an extensive literature search for information describing innovative and non-innovative schools; and, interviews with ten practicing school-based change agents. The information collected from the literature search was organized in the form of a series of referenced paragraphs summarizing study findings. Items were in turn written using these paragraphs as an information base (see Appendix B for the reference list resulting from the literature search).

In taped interviews with school-based change agents (see Appendix C for the interviewing form), the change agents were asked questions about the school and school district environment. The specific questions generally corresponded with

the major areas which emerged from the literature. The tapes were then partially transcribed for information which would be likely to yield items, and items were subsequently written. Based on these interviews and the literature search, an item pool of 500 descriptive statements has been collected to date and fall into the following seven scale areas:

Scale I: School-Based Staff
(Items in this scale describe characteristics of school-based staff in relation to the school's potential for successfully adopting innovations. The items tap information on personality and leadership styles of teachers, principals, and counselors, in relation to school innovativeness. Variables such as interpersonal and professional interaction patterns, staff attitudes, previous working experience, and demographic characteristics are also considered in this scale.)

Scale II: Communications
(Items in this scale attempt to identify communication variables which significantly affect a school's potential for successfully adopting an innovation. This scale particularly aims at uncovering information on patterns of communication both within the school and the entire school system. Particular items focus on the initiators, types, and forms of communication with respect to both formal and informal channels of communication.)

Scale III: Innovative Experience
(Items in this scale describe a school's experience with innovations and attitudes towards innovation. Items in this scale are concerned with both past attempts at innovation and present plans for innovation. Particular focus is on the degree to which a school has prepared itself for the adoption of innovations, the reasons for considering adoption of innovations, and the extent to which the school has realistically assessed its needs. The consultant role, the district role, and the community role are also considered in relation to both past and present plans for adopting innovations.)

Scale IV: Central Administration
(The Central Administration Scale focuses on relations between the central offices, school, and school board, and identifies attitudes of the central offices and school board toward innovation, their roles in relation to the school, and their awareness of the school's particular problems.)

Scale V: School/Community Relations
(Items in the School/Community Relations Scale attempt to tap information on such variables as the amount and sources of funding, the degree of interest and involvement of community groups in the school system, the social-economic environment, and attitudes of the community towards the school.)

Scale VI: Organizational Climate

(Items in this scale describe the work climate and organizational structure of both the school and the central district office. Some of the particular organizational variables which are tapped include how decisions are made; how goals are established; what task groups exist; how task groups function; how planning takes place; what resources are availalble; how resources are used; how the organizational hierarchy is defined both within the school and the school district; and, the degree of centralization within the school district.)

Scale VII: Students

(Items in this scale describe student behavior, attitudes and demographic characteristics. Items attempt to tap information on student attitudes by focusing on student behaviors in the classroom and the lunchroom, as well as particular behaviors such as absenteeism, tardiness, and number of discipline problems. Minority relations among the students, teacher/student rapport, and academic excellence are also considered to be important variables affecting the adoption/diffusion process.

Item Analysis and Initial Validation and Norming

200 of the initially collected 500 items, will be selected to build the experimental form for the item analyses. However, before these items are submitted to a sample of change agents for the analyses, they will be given to a group of organizational specialists to be examined in the same manner as the items on the higher educational based TSC. The items, formatting, instructions, and scoring system will be identical to those of the higher educational based TSC. Similarly, the plans to date for the initial norming and validation will be the same as the plans for the higher educational based TSC (see Appendix D for a sampling of the school-based TSC items).

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Appendix A

The "Trouble Shooting" Checklist (TSC)
for Higher Educational Based Settings

(Experimental Form No. 2)

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 = very untypical

___ 1. Any contacts with change agents that this department requests will be at the wrong time and/or for the wrong reasons.

___ 2. The students are in frequent contact with one another (e. g., in seminars, in the field, in the learning resource center).

___ 3. The faculty are concerned with increased understanding of both themselves and others.

___ 4. The faculty seem to be well informed about current educational developments in many fields.

___ 5. The department chairperson has support from administrators higher up in the organizational hierarchy.

___ 6. Individual members of the department are not in a position to reinforce each other.

___ 7. There is little real, substantial communication (e. g., evasive communications may inciude remarks about the financial situation, philosophical bases, what is going to be done, etc.).

___ 8. The students are enthusiastically involved in the program.

___ 9. The faculty cannot imagine either themselves or others in new roles.

___ 10. Studenis' ideas are taken seriously by the faculty.

___ 11. Frequent contacts have resulted in an increased rapport between change agents and the department.

___ 12. The students do not respect faculty opinion.

___ 13. The department has not responded to the one or two contacts that have been made by a change agent.

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 - very untypical

___ 14. The faculty are reflective and analytical about the adoption-implementation process.

___ 15. The faculty are indifferent to the interpersonal dynamics within their department.

___ 16. This department uses resource material effectively to develop its own materials.

___ 17. The students view their education only as a means to an end.

___ 18. This department has minimal awareness about innovation.

___ 19. If the administration can be sold on an innovation, it will then be necessary to convince a doubting faculty of the administration's interest.

___ 20. The leadership in key positions desires to maintain the status quo.

___ 21. The administration is flexible.

___ 22. The faculty are interested in teaching students.

___ 23. The structure of the organization includes reasonably well-functioning communication channels.

___ 24. There are only a few faculty who are trying to arouse interest in actual trial testing of an innovation.

___ 25. The department is involved with the successful adoption of other innovations.

___ 26. The dean acts as a hindrance to adoption and diffusion of innovation.

___ 27. This department has already talked about modifying testing materials to fit their needs for pilot testing.

___ 28. The change agent working at this department is not in a position of authority.

___ 29. The faculty are threatened by new approaches.

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 = very untypical

____ 30. Communications between a change agent and this department are primarily social, rather than professional.

____ 31. The faculty make much noise about "standards."

____ 32. The department has no recognized leadership.

____ 33. The faculty exchange ideas with one another.

____ 34. The dean supports the faculty in adopting innovations.

____ 35. There is a willingness to initiate needed change rather than maintain the status quo.

____ 36. This department feels comfortable with regular communication from the beginning of the adoption process.

____ 37. Many of the faculty, while not actively opposed to innovation, will not commit themselves.

____ 38. The students take initiative in seeking out challenge.

____ 39. There is a small group of highly involved adopters who work in close proximity.

____ 40. There is an organizational inertia at this institution.

____ 41. The dean is not assertive in establishing and/or attaining goals.

____ 42. The students have a high energy level.

____ 43. The students are passive.

____ 44. Communications result in constructive action.

____ 45. There is a small group of adopters who clearly demonstrate an ability to effectively communicate with a larger faculty group in order to gain their support.

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 = very untypical

___ 46. An innovation already adopted by this department shows promise of being a catalytic force behind the adoption of future innovations.

___ 47. The department chairperson is strongly supportive (e.g., through public statements, promotion rewards, provision of resources, etc.).

___ 48. The department chairperson uses many cliches (e.g., why change for the sake of change? before we buy any program, we must establish a sound philosophical base, etc.).

___ 49. The department chairperson is concerned with current developments relevant to an innovation under consideration for adoption.

___ 50. This department characteristically discusses plans for research and refinement when considering any innovation.

___ 51. The students quite often succeed in spite of the institutional influence.

___ 52. The students praise their program for the interrelatedness of its courses.

___ 53. This department shares their problems and experiences with a change agent.

___ 54. The department chairperson is concerned with the quality of instruction.

___ 55. The students treat each other as equals.

___ 56. The faculty do not have the knowledge to systematically adopt an innovation.

___ 57. The students are eager to share experiences and ideas with each other.

___ 58. This department may be avoiding contact with a change agent consulting on one of its projects.

___ 59. The departmental efforts in seeking out assistance in implementing innovations have been meager.

___ 60. There is mutual trust among members of the faculty.

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 = very untypical

___ 61. Some individual faculty members have made much progress with respect to an innovation.

___ 62. Faculty members are either insecure and/or overly protective of an image.

___ 63. The faculty members are interested in how innovation can bring about specific changes in their department.

___ 64. Either the department chairperson or dean is cognizant of curriculum development procedures.

___ 65. The faculty seem ready to commit themselves to adopting innovations.

___ 66. The faculty are highly interested in innovation.

___ 67. Communications concerning innovation have all been enthusiastic and positive.

___ 68. The students are personally aware.

___ 69. The students relate personal problems to faculty members.

___ 70. The faculty are remote and/or actively hostile.

___ 71. In the past, the high interest of the faculty has resulted in early plans toward pilot testing of innovations.

___ 72. The dean is unwilling to fight with anyone above him/her.

___ 73. An older faculty discourage younger faculty from remaining.

___ 74. The faculty like to think of themselves as innovative because they can mention some program names.

___ 75. The faculty lack the ability to approach a new situation analytically.

___ 76. There is much reinforcement for development and implementation of innovations.

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 = very untypical

___ 77. This department has developed its own products and has its own well-defined standards for the acceptance of an innovation.

___ 78. The department chairperson views most change as a personal affront.

___ 79. Any material, regarding innovations, made available to the department, will probably remain on the shelf unexamined.

___ 80. The students are encouraged to develop their own style.

___ 81. All of the faculty seem equally involved in increasing the level of use of previously adopted innovations.

___ 82. Some faculty may already be committed to traditional teaching methods.

___ 83. This department seems to resent change agent visits.

___ 84. Departmental efforts to communicate with change agents have not always been appropriate.

___ 85. Contacts with change agents have been far enough apart that developments can be evaluated.

___ 86. The students are constantly exposed to new ideas.

___ 87. The department chairperson views the curriculum as the final word.

___ 88. Long lapses in communication may occur between the department and change agents.

___ 89. The supporters of innovation have serious communication problems with the faculty at large.

___ 90. There are only weak endorsements instead of real commitments to any basic change within the department.

___ 91. The department chairperson (or direct supervisor) is not encouraged in his interest in innovation.

Please rate on a 1 - 5 scale (as indicated below), how closely each item describes the department you are rating:

5 = very typical
4 = somewhat typical
3 = neither typical nor untypical
2 = somewhat untypical
1 = very untypical

___ 92. Personal visits have helped the department and change agents establish common goals.

___ 93. Interested faculty members are in regular communication with change agents.

___ 94. This department has had the discipline to follow precisely the directions of a developer of an innovation until they have mastered basic skills.

___ 95. The faculty is highly involved in developing innovations.

___ 96. The students realistically assess their own abilities and needs.

___ 97. The students feel frustrated and disillusioned because of a lack of "standards" in their field.

___ 98. The students are challenged by innovative developments.

___ 99. The faculty are interested in teaching tools as opposed to ideas.

___ 100. The students are excited about innovative approaches which compliment their individual learning styles.

Scoring

Reverse Key Scoring

The item numbers listed below are reverse-keyed and should have their rating values changed in the following manner:

5 = 1
4 = 2
3 = 3 (reverse keyed items rated 3, should not be changed)
2 = 4
1 = 5

For example, if you have marked one of the following items a "1," it should be changed to a "5" for scoring purposes; if you have marked one of the following items a "4," it should be changed to a "2" for scoring purposes.

The following items should be reverse-keyed:

1	13	20	30	41	58	73	82	89
6	15	24	31	43	59	74	83	90
7	17	26	32	48	62	75	84	91
9	18	28	37	51	70	78	87	97
12	19	29	40	56	72	79	88	99

Deriving Total Score

After the item ratings have been changed as described above, add up all ratings to the left of items for the total score.

Deriving Scale Scores

The scale names and descriptions are as follows:

Scale I: Organizational Climate
(Items in this scale describe the work climate and organizational structure of both the department and the institution as a whole.)

Scale II: Organizational Staff
(Items in this scale describe personality and leadership styles of faculty and administrators within the department.)

Scale III: Communication
(Items in this scale describe communications both within the department and within the institution as a whole.)

Scale IV: Innovative Experience
(Items in this scale describe a department's experience with innovations and attitudes towards innovation.)

Scale V: Students
(Items in this scale describe student behavior, attitudes, and demographic characteristics.)

In order to derive each scale score, add the ratings of their respective item numbers listed below:

Scale I:	4	20	31	45	73
	5	21	34	47	75
	6	23	39	56	89
	14	28	40	64	91
Scale II:	3	26	41	60	78
	9	32	48	62	82
	15	33	49	70	87
	22	35	54	72	99
Scale III:	1	19	53	67	88
	7	30	58	83	90
	11	36	59	84	92
	13	44	61	85	93
Scale IV:	16	27	50	71	79
	18	29	63	74	81
	24	37	65	76	94
	25	46	66	77	95
Scale V:	2	17	51	68	96
	8	38	52	69	97
	10	42	55	80	98
	12	43	57	86	100

Interpretation of Test Scores without Using Norms:

Since norms have not yet been developed for the higher-educational TSC, the scoring system outlined above is, for the time being, primarily demonstrative. However, since the items are both empirically and literature based, they do reveal some descriptive information about an institution. Items which are not reverse-keyed, describe characteristics of ideal institutions; items which are reverse-keyed describe characteristics of institutions which are not likely to succeed in the adoption/implementation process.

Normally-keyed items which have received high ratings (ratings of 4 or 5), describe ideal characteristics which can be observed. Conversely, low ratings on these items would indicate the extent to which the institution falls short of these ideal characteristics. If the reverse-keyed items are examined, high ratings (before reverse-keying the items) will be indicative of an institution which has characteristics inhibiting the adoption and implementation of innovations. Conversely, low ratings will describe characteristics which would be positively related to the successful adoption of innovations.

Items within each scale can be examined in the same manner, for descriptions of how the institution stands in relation to each of the areas described by the scales.

Scoring Sheet

TOTAL SCORE_____

SCALE SCORES:

SCALE I:	Organizational Climate	SCALE SCORE_____
SCALE II:	Organizational Staff	SCALE SCORE_____
SCALE III:	Communication	SCALE SCORE_____
SCALE IV:	Innovative Experience	SCALE SCORE_____
SCALE V:	Students	SCALE SCORE_____

Appendix B

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Appendix C

School-Based TSC Interviewing Form

I am developing a diagnostic and predictive instrument for schools which focuses on assessing the likelihood of any given school successfully adopting an innovation. The innovation could be anything from an entire IGE program to a single instructional module used in a reading or math program. I am assuming that there are sets of circumstances, conditions, characteristics, etc. which exist in order for any form of change to take place. From the correspondence that I have received in response to a similar instrument I am developing which focuses on higher educational institutions, there appears to be a very marked need for a school-based instrument which would assess such a set of conditions.

I would like to ask you about what you think are the major characteristics of schools which add and detract from a school in its successful adjustment to change. I would like you to think about individual schools in relation to the school system and community. Rather than just asking about the entire picture at once, I will focus on one area of the school environment at a time. For example, I will first ask about a school's communication system, and then go on to ask about what types of organizational structures facilitate the change process and what types detract from the process of change, and so on.

1. Communications.

What kind of communication system would be in operation in a school which you would consider to be innovative? How about a non-innovative school?

Prompting Examples: Are communications usually by word of mouth or memo; who initiates communications; how is important information communicated--through informal or formal channels; what could be expected of communication between the particular school and the other parts of the school system--the central offices, school board, and superintendent?

2. Organizational Structure.

How would you describe the organization structure at innovative schools? How about non-innovative schools?

Prompting Questions: What are unit structures, team structures, and inter-disciplinary efforts like? Are team leaders, subunits and paraprofessionals characteristic of this school?

3. Students. How would you describe students in a school system which was ideally suited for adopting innovations?

What about students in schools which are clearly non-innovative?

4. Curriculum Specialists.

What would be the characteristics of curriculum specialists at innovative schools. --both with respect to their personal characteristics and their role in the school?

What about at non-innovative schools?

5. Counselors.

What are the counselors like at innovative schools? What is their role in the school?

What would the counselors be like at non-innovative schools?

6. Central Offices

How would you describe the central offices at innovative schools? What activities should they focus on, and how would you describe their function within the school and the school system?

How about the central offices in non-innovative schools?

7. Innovative Experience

What kinds of experiences do you think innovative schools have had with innovations in the past, and what do you think would be the approach an innovative school would use in implementing an innovation?

How about a non-innovative institution?

8. School/Community Relations.

What kinds of relations would one find between an innovative school and its community? What about a non-innovative school and its community?

Probe: How well informed is the community about changes in the school system? What are the sources of funding for the innovation? How involved is the community in the school system? What is the per capita income of the community?

9. Work Climate. How would you describe the work climate in an innovative school, and in its central offices.

   How about a non-innovative school?

10. Principal.

    How would you describe the principal and his leadership style in relation to the teachers, the school board, superintendent, counselors, curriculum specialists and central offices?

    What about principals in non-innovative schools?

11. Teachers.

    What would you expect the teachers to be like in an innovative school? What would you expect their role to be in the school district? How do you think they perceive themselves?

    What about teachers in a non-innovative school?

Appendix D

Sample Items (School Based TSC)

A community group exists as a go-between for the school system and the community (e.g., an ombudsman, assessment council, and/or advisory committee).

Many students at this school are failing.

The curriculum leaders set expectations in both written and oral communications.

The innovations which have been adopted by this particular school are similar to the innovations which have been adopted by the entire district.

This organization has sufficient personnel, or will be able to acquire sufficient personnel for the successful implementation of innovations.

Board members communicate often with the superintendent.

The school administrator initiates communications with the change agent.

There are intricate requirements for the application for funding, which include specific references to procedures and evaluation.

The faculty is unaware of the curriculum specialist and his role.

This school is considering innovations that contain easily alterable materials capable of meeting the demands of varied teaching situations.

The research community and the school are in constant communication with one another.

Specific problems and needs have been identified by members of this school system.

The community is high in per capita wealth.

There is a relatively high expenditure per student.

Student tardiness is in the range of average or below average in occurrence.

The curriculum specialists have systematically collected information about the needs of the shcool through direct contact with teachers.

The curriculum specialist is a person who has been specifically trained for the job.

The students seem to have formed strict cliques among themselves.